

REMARKS

Claim status

Claims 1-35 were pending in the application at the time of the current Office Action. No amendments have been made to the claims herein. Claims 1-35 are currently pending in the patent application.

Specification

The specification has been amended herein simply to correct the two-digit paragraph numbering to make them four-digit paragraph numbering, and to insert the now known serial number of a patent application that was incorporated by reference in the original patent application.

Allowable Subject Matter

Claims 7, 8, 14, 24, 25, and 31-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants gratefully acknowledge the Examiner's statement that claims 7, 8, 14, 24, 25, and 31-35 would be allowable. However, it is Applicants position that independent claims 1 and 15 clearly distinguish the present invention from the prior art, and are in allowable condition, for at least the following reasons.

Section 103 rejections

In the current Office action, claims 1, 3-6, 10, 12, 15, 17, 18, 22, 23, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohira et al (6,407,719), hereinafter Ohira, in view of Vinson et al (6,100,855), hereinafter Vinson.

Also, in the current Office action, claims 2, 9, 11, 13, 16, 19-21, 26, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohira in view of Sharp et al (5,990,845), hereinafter Sharp.

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

Independent claim 1 recites a ground plane beam antenna for transmitting and/or receiving radio frequency (RF) signals, said antenna comprising:

at least one parasitic reflector element having a first end and a second end;

at least one parasitic director element having a first end and a second end;

a driven element positioned co-linearly with and between said at least one reflector element and said at least one director element; and

an electrically conductive ground plane being electrically connected to said at least one reflector element and said at least one director element at said second ends, and being electrically isolated from said driven element, the ground plane comprising a first electrically conductive sheet having a width of about $\frac{1}{4}$ wavelength of a tuned radio frequency. (emphasis added)

Independent claim 15 recites a method to construct a ground plane beam antenna for transmitting and/or receiving radio frequency (RF) signals, said method comprising:

generating a driven element that is tuned to at least one predetermined radio frequency;

generating at least one linear, parasitic reflector element having a first end and a second end and having an initial length based on, at least in part, said tuned driven element;

generating at least one linear, parasitic director element having a first end and a second end and having an initial length based on, at least in part, said tuned driven element;

positioning said driven element co-linearly with and between said at least one reflector element and said at least one director element;

generating an electrically conductive ground plane, the ground plane comprising a first electrically conductive sheet having a width of about $\frac{1}{4}$ wavelength of at least one predetermined radio frequency; and

electrically connecting said ground plane to said second ends of said reflector element and said at least one director element and keeping said ground plane electrically isolated from said driven element. (emphasis added)

It is respectfully submitted that neither Ohira, Vinson, nor the combination thereof teaches or suggests the claimed invention of independent claims 1 and 15. In particular, neither Ohira, Vinson, nor the combination thereof teaches or suggests providing parasitic, reflector, and director elements being electrically connected to a ground plane directly at the second ends of the parasitic elements as does the claimed invention of claims 1 and 15. In the claimed invention of claims 1 and 15, the phrases "electrically connected" and "electrically connecting" and "at the second ends" refer to a direct conductive electrical connection (i.e., a direct short, independent of any particular frequency) between the ground plane and the second ends of the parasitic

elements. The specification of the present application and the drawings of the present application clearly use and illustrate these phrases only in this sense. The present application does not refer to any type of reactive electrical component or any other type of component between the parasitic elements and the ground plane as is described by Ohira. The present application also does not refer to there being an electrical connection only above a certain frequency due to the presence of a reactive component between the parasitic elements and the ground plane as is stated by Ohira.

Instead, Ohira describes the parasitic elements as being “electrically insulated” from the ground conductor (column 3, lines 6-10 and column 4, lines 9-11). This clearly indicates these elements are not electrically connected to the ground plane, teaching directly away from the present invention. The second ends of the parasitic elements of Ohira are instead connected to variable-reactance elements 23. By controlling these variable reactance elements 23, it is stated the directivity of the antenna array can be controlled. This is the whole purpose of the Ohira antenna, to control and change the directivity of the antenna array. If the parasitic elements of Ohira were connected directly to a ground plane, then directivity would become fixed and could not be changed, and the purpose of the antenna array of Ohira could not be achieved.

In the claimed invention of claims 1 and 15, the directivity of the resultant ground plane beam antenna is fixed at least because the second ends of the parasitic elements are electrically connected to the ground plane, with no intervening components such as variable-reactance elements in between. It is a purpose of the ground plane beam antenna of the claimed invention of claims 1 and 15 to provide a single, unchangeable directivity, which is the exact opposite purpose of the antenna array of Ohira. Furthermore, the parasitic elements and the driven element of the claimed invention of claims 1 and 15 are all co-linear. Neither Ohira nor Vinson show such a co-linear configuration. Instead, Ohira shows parasitic elements spaced at a predetermined angle on the circumference of a circle around the feed element (Fig. 1 and column 3, lines 6-16).

Further, independent claim 2 and other claims of the present invention, also define the driven element as having a structure which is clearly not taught or made obvious by the cited prior art. The prior art of Ohira shows a feeding element A0 which is stated to be a cylindrical

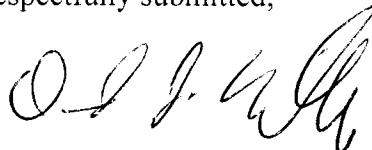
radiating element as shown in Fig. 2. The driven element of the present invention includes at least two radiative members disposed in the particular relationship of being connected at an apex point, and directed outwardly at an acute angle. The prior art of Ohira does not suggest this structure in any way, and the additional prior art of Sharp also does not show such a construction. This combination of prior art simply does not show these as well as other features as set forth in the dependent claims.

Also, it is respectfully submitted that Sharp does not in any way contribute to any anticipation or obviousness of independent claims 1 and 15.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claim 1 and independent claim 15 are neither anticipated nor rendered obvious, and it is respectfully submitted that claim 1 and claim 15 define allowable subject matter. Also, since pending claims 2-14 and 16-35 also distinguish the present invention, and depend either directly or indirectly from claim 1, it is respectfully submitted that claims 2-14 and 16-35 define allowable subject matter as well. Applicants respectfully request that the rejections of the claims under 35 U.S.C. 103(a) be removed.

Accordingly, the applicant respectfully requests favorable action with respect to claims 1-35 which are believed to be in prima facie condition for allowance and clearly distinguish over the prior art.

Respectfully submitted,



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